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Discovery of the Second Species of the Mangrove Cricket,
Apteronomobius (Orthoptera, Gryllidae), in the Ryukyus

With 11 Text-figures

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ABSTRACT The second species of the genus *Apteronomobius* is described as new under the name of *A. asahinai* from the mangrove swamps in Iriomote-jima Island of the Ryukyus. This new species is closely allied to the type-species of the genus, but is clearly distinguished from it by the number of external movable spines on the superior margin of hind tibiae. In addition, a redescription of the genus is also presented together with a key to the species and a discussion on the distribution of the genus.

The peculiar mangrove cricket, *Apteronomobius longipes*, was originally described by Chopard from Samoa in 1929 as a new genus and species. Since then, there has been no report on this unique genus or species which inhabits only mangrove forests and swamps in preference.

When I had an opportunity to visit Iriomote-jima Island of the Ryukyus in June, 1976, I discovered the second and new species of this interesting genus and was fortunately able to collect ample material in the mangrove swamps. The Island of Iriomote-jima, one of the Yaeyama group of the Ryukyus, is a small island of 75.5 km in circumference and 270.9 km² in area, 90 percents of which is densely covered with subtropical virgin forests. It is also well-known for the existence of mangrove swamps, which are richest in the Ryukyus.

In the following pages, a description of this new species is presented, together with a redescription of the genus, a key to the species, and a discussion on their distribution.

Before going further, I wish to thank Dr. S. Asahina of the National Institute of Health, Tokyo, for his kind invariable guidance in the course of my study of Orthoptera. Thanks are also due to Dr. J. A. Tenorio, Dr. G. A. Samuelson and Mr. G. M. Nishida of Bernice P. Bishop Museum, Hawaii, for their kindness in allowing me to examine one of the original specimens of *Apteronomobius longipes* deposited in the museum.

Apteronomobius Chopard, 1929

Apteronomobius Chopard, 1929, *Insects of Samoa*, 1 (2-Orth.), p. 29.

Type-species: *Apteronomobius longipes* Chopard, 1929.

Redescription. Completely wingless in both sexes, but similar in general appearance to *Paranemobius* Sauss.

Head not excavated above and with long black bristles. Pronotum fringed with long black bristles on the anterior margin. Fore tibiae completely devoid of tympanal organs. Hind tibiae with 2 or 3 external and 2 internal movable spines on superior margins, all these spines being long-haired; apical spurs composed of 3 external and 2 internal ones as in *Paranemobius*; these spurs also long-haired; the superior spur in internal apical ones a little longer than metatarsus. Cerci not so long though their tips reach the apex of hind femora, with club-shaped hairs in the basal part.

Hygrophilous, showing a marked preference for mangroves.

Range. Known so far from Upolu of the Samoa Islands, Viti Levu of the Fiji Islands (new record)*, and Iriomote-jima of the Ryukyu Islands (new record).

Notes. The present genus resembles *Paranemobius* because of its hygrophilous habit, but as its basic characters are in common with *Scottiola* Uvarov (cf. Chopard, 1969), it seems more closely related to the latter. However, more detailed information of *Scottiola* is needed to determine the true affinity of this genus.

Key to the Species of *Apteronomobius*

- 1 (2) Hind tibiae with 2 external and 2 internal movable spines on the superior margin; proximal movable spine on the supra-internal margin short
..... *A. longipes* Chopard.
- 2 (1) Hind tibiae with 3 external and 2 internal movable spines on the superior margin; proximal movable spine on the supra-internal margin long
..... *A. asahinai* n. sp.

Apteronomobius asahinai n. sp.

[Japanese name: Mangurôbu-suzu]

(Figs. 1-12, excluding 4)

Closely allied to the type-species of the genus, but distinguished from it by the number of external movable spines on the superior margin of hind tibiae, the length of proximal movable spine on the supra-internal margin, that of the inferior spur in internal apical ones of hind tibiae, and the shape of ovipositor.

Body (Fig. 1) very similar in shape to that of *A. longipes*, pubescent, marmorate with dark or blackish brown, and ground colour pale or whitish brown. Apterous.

* See Addendum.

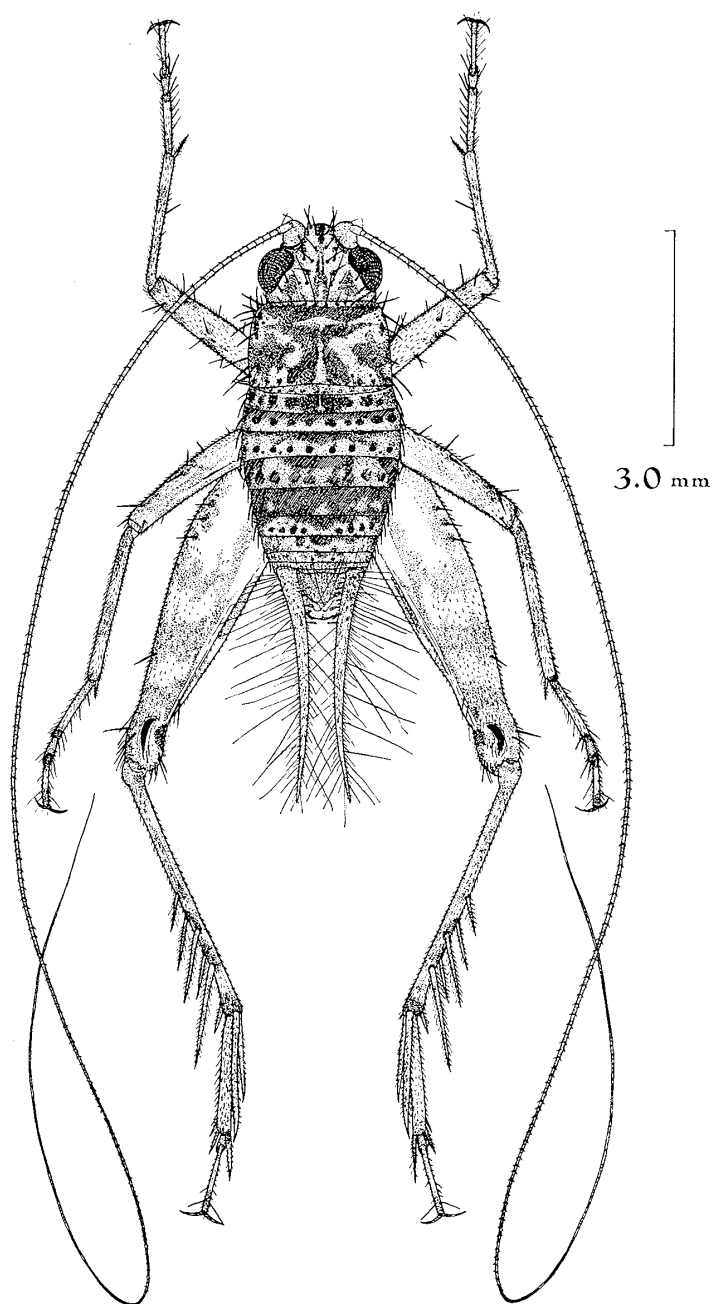
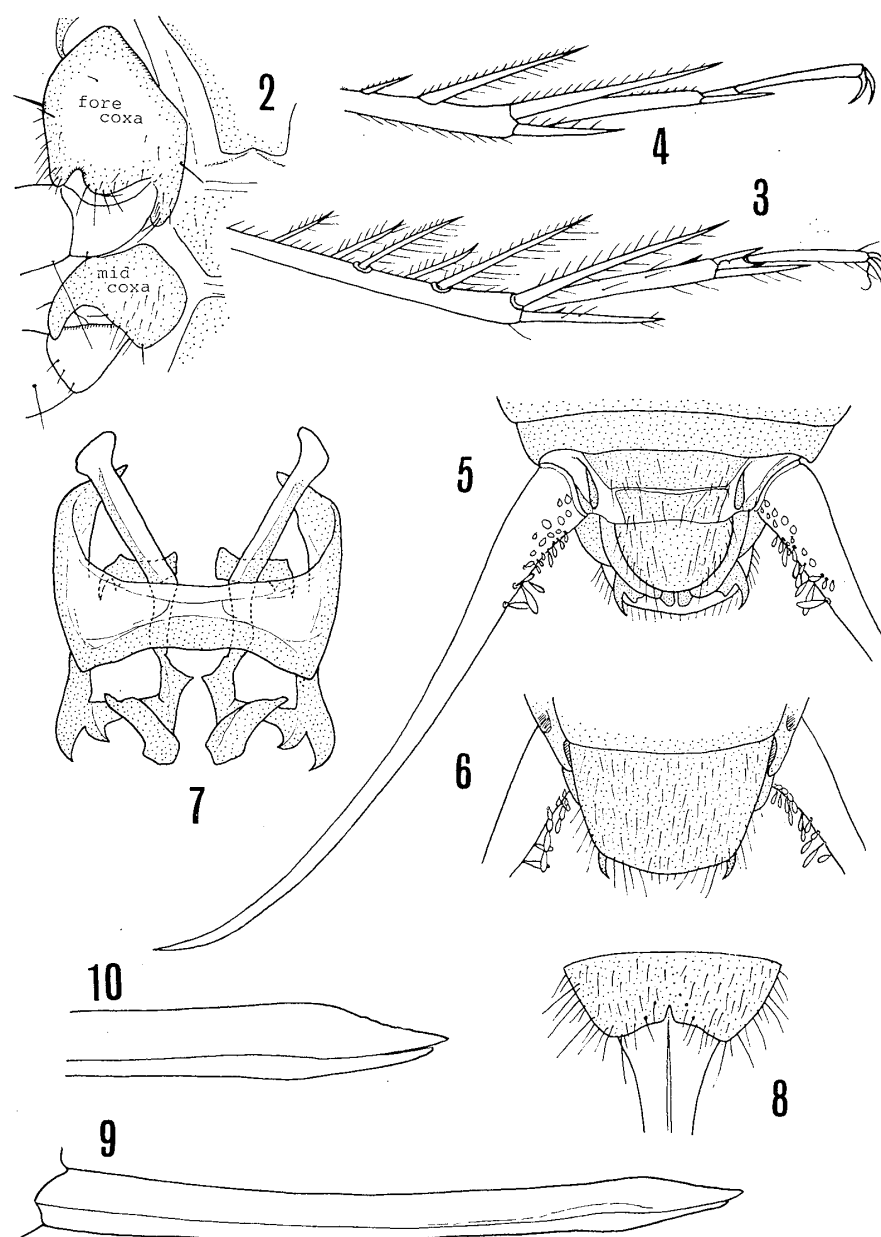


Fig. 1. *Apteronomobius asahinai* Yamasaki, sp. nov., ♂, of Komi, Iriomote-jima Island.

Head a little narrower than the width of pronotum; vertex and occiput with 2 irregular rows of long black bristles. Face triangular with median longitudinal brown bands; labrum brownish. Tip of maxillary palpi dark. Eyes round, protruded; ocelli distinct. Antennae long, brown; the 1st segment large and very stout.

Pronotum transverse; anterior margin straight and fringed with long black bristles; posterior margin also straight but bearing no conspicuous bristles; disc adorned



Figs. 2-10 (excluding Fig. 4). *Apteronemobius asahinai* Yamasaki, sp. nov. — 2. Fore and mid coxae, ventral view. — 3. Apical half of right tibia and tarsus of hind leg, internal view. — 5. Abdominal end of male, dorsal view. — 6. Subgenital plate of male, ventral view. — 7. Male genitalia, dorsal view. — 8. Subgenital plate of female, ventral view. — 9. Ovipositor, lateral view. — 10. Tip of ovipositor, a little enlarged comparing to Fig. 9. — Fig. 4. *A. longipes* Chopard; apical half of right tibia and tarsus of hind leg, internal view (after Chopard).

with dark brown bands and markings; lateral lobe pale brown with small brown spots, its inferior margin slightly ascending posteriorly. Mesonotum short and sometimes concealed under pronotum. Metanotum blackish in anterior half;

posterior half pale brown but with blackish spots of various sizes.

Legs rather long. Fore and middle legs with some brown markings; femora with several long blackish bristles; coxae as shown in Fig. 2; tibiae dark brown except for central and apical parts which are whitish; underside of tibiae with one or two brownish bristles; metatarsus longer than the 3rd segment of tarsus. Hind femora long and stout, with 3 or 4 brown bands dorso-internally; knees also brown; tibiae brown with a pale ring in basal half and with 2 or 3 small brown bands in apical part; superior margin of tibiae with 3 external movable spines of almost the same length, and with 2 internal movable spines, shorter proximal and longer distal, the latter of which is the longest of all the spines (Fig. 3); inferior spur in internal apical ones of tibiae shorter than the superior one, which is longer than metatarsus, though it is a little longer than that of *A. longipes*; 3 external apical spurs of tibiae short, the median one being the longest; tarsi (Fig. 3) the same as those of *A. longipes* (Fig. 4).

Abdominal tergites adorned with blackish, wide triangular markings with the bases on the anterior margins, their posterior half being pale brown with 10 small blackish spots along each posterior margin; 4th abdominal tergite often blackish almost all over. Ventral surface of abdomen whitish but with brownish markings along the mid-line of each sternum and sternite.

Supra-anal plate of male as shown in Fig. 5; posterior margin round. Cerci brown, medium-sized, with swollen hairs in the basal part as shown in Figs. 5 and 6. Subgenital plate of male excurved at the posterior margin (Fig. 6), while that of female (Fig. 8) excised at the posterior margin, more deeply so in a V-shape at its centre. Male genitalia as shown in Fig. 7; tips exposed as shown in Figs. 5 and 6.

Ovipositor feebly curved upward as shown in Fig. 9; its tip as shown in Fig. 10, superior margin of distalmost part slightly indented.

Measurements (length in mm). Body length, ♂: 5.5–6.2, ♀: 6.6–7.8; head width (including eyes), ♂: 1.7–1.9, ♀: 1.8–2.0; pronotal length, ♂: 1.2–1.3, ♀: 1.2–1.7; pronotal width, ♂: 1.8–2.0, ♀: 2.1–2.2; hind femoral length, ♂: 4.3–4.8, ♀: 5.1–5.5; hind tibial length, ♂: 3.5–4.0, ♀: 4.0–4.3; ovipositor length, 4.4–5.0.

Type-series. Holotype: ♂, mangrove swamp at Komi, Iriomote-jima Island, 16–VI–1976, T. Yamasaki leg. Allotype: ♀, same data as the holotype. Paratypes: 14 ♂♂, 23 ♀♀, same data as the holotype; 5 ♂♂, 13 ♀♀, mangrove swamp at Inabairiguchi near Hoshidate, Iriomote-jima Island, 14–VI–1976, T. Yamasaki leg.

The type material is deposited in the collection of the National Science Museum (Nat. Hist.), Tokyo, and some paratypes are preserved in my collection for study.

Other materials. 8 ♂♂, 6 ♀♀ (in alcohol), the same data as the holotype.

Type-locality. Komi on Iriomote-jima Island of the Ryukyus.

Range. Known so far only from Iriomote-jima Island, the Ryukyus.

Notes. At low tide, this cricket promenades on the intertidal wet mud in mangrove swamps, and often assembles on organic matters, such as carrion. Large mounds piled up by *Thalassina anomala*, mangrove shrimp ('Okinawa-anajako'), are scattered in the same places.

The main area of the mangrove forests in Iriomote-jima Island consists of zones of *Sonneratia alba* ('Mayapushiki'), *Rhizophora mucronata* ('Yaeyama-hirugi'), *Kandelia candel* ('Me-hirugi'), and *Bruguiera conjugata* ('O-hirugi') regularly arranged landwards from the sea. The cricket seems to prefer mature *Bruguiera* vegetation, probably because it forms a thick shade even in the daytime. In addition to this scotophilous habit, the cryptic coloration and small size of its body make it difficult to locate the cricket on wet mud.

This species may be found in the mangrove swamps of Ishigaki-jima Island, adjacent to Iriomote-jima Island.

The specific name of the new species is dedicated to Dr. Syoziro Asahina, who has always been my best teacher in entomolgy, in commemoration of his long research career devoted to basic entomolgy.

DISTRIBUTION

Apteronomobius longipes, the first species of the genus, has been known only from Upolu Island of the Samoa Islands, but a second locality of the same species, i. e., Viti Levu Island of the Fiji Islands, was discovered very recently, as will be recorded in the addendum to this paper. On the other hand, the second species,

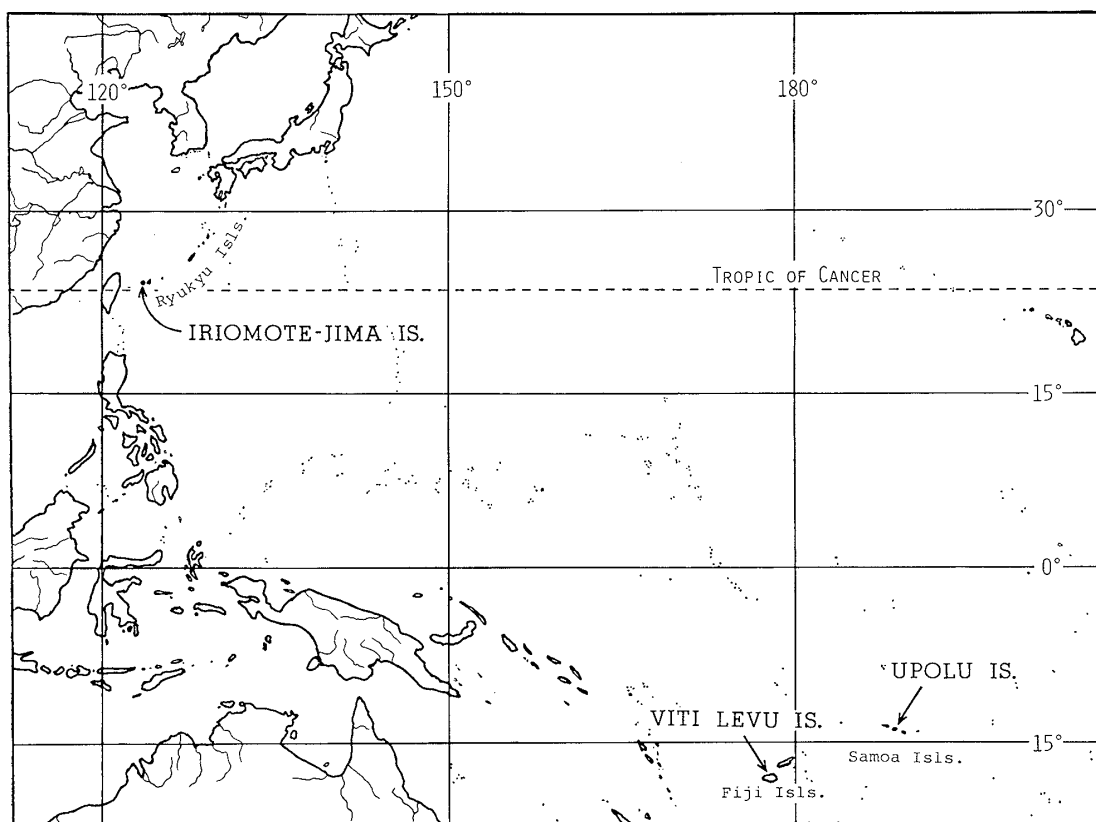


Fig. 11. Distribution map of the genus *Apteronomobius*.

A. asahinai, is found in the northwestern Pacific very remote from these islands (Fig. 11).

It seems to me that mangrove crickets prefer mature mangrove forests in which it is dark even in the daytime, as seen in the *Bruguiera conjugata* zone of Iriomotejima Island, and that they are seldom met with in young mangroves or other vegetations. Furthermore, they are small in size and coloured dark or blackish brown fitted to the colour of mangrove mud, as was mentioned in the note of *A. asahinai*. These may be the reasons why the mangrove crickets were scarcely collected after Chopard's record. When careful investigations are made, *Apteronemobius* will doubtless be found in the intervening areas between the Ryukyus and the Samoas.

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ADDENDUM

Through the courtesy of Dr. H. Kurahashi, National Institute of Health, Tokyo, I was able to examine three specimens belonging to *Apteronemobius* from Viti Levu Island of the Fiji Islands. A closer investigation revealed that they are nymphs of *A. longipes* Chopard.

2 ♂♂ nymphs, 1 ♀ nymph, mangrove swamp 50 miles west of Suva, Viti Levu Island, the Fiji Islands, 2-III-1978, H. Kurahashi leg.

This is a new record from the Fijis.

I wish to express my hearty thanks to Dr. Kurahashi for giving me the privilege of studying these specimens.